

GEO



By

Dr M. Senthilkumar
Assistant Professor

Department of Computer Science
Government Arts and Science College, Avinashi - 641654

GEO

- ✓ Geosynchronous Satellite/ Geostationary Satellites
- ✓ Stationary
- ✓ Equatorial plane
- ✓ 180 satellites – Ku band
- ✓ More than 180 – Ka band
- ✓ Whole Earth – Only 3 satellites are enough

GEO

- ✓ Radius is above 42000 km
- ✓ At the precise distance of 35786 km – Sea level
- ✓ Period: 24 Hours
- ✓ Speed of Light 3×10^8 Meters/ Sec - Round trip delay is 270 milliseconds

- ✓ Low privacy and security
- ✓ True: Telephone Network - Distance increases the cost of communication increases
- ✓ True: Satellite Network - Cost of communication is independent of distance

VSATs

- ✓ Ground station/ Antenna has to be several meters in diameter
- ✓ So the cost of the antenna and the communication system is quite high
- ✓ Direct Communication between Satellites to Very Small Aperture Terminal

VSATs

- ✓ So the cost of the Communication system is quite low
- ✓ Ku band with an antenna diameter of only 1 to 2 m
- ✓ Requires transmitting power of only 1 to 2 watts for communication

VSATs

Three types such as one-way, split two-way and two-way

- ✓ Split two-way
 - ✓ Little special situation where VSAT does not require uplink – Less Cost
 - ✓ Satellite sends data in the downward direction
 - ✓ PSTN Public Switched Telephone Network or cellular telephone network

VSATs

- ✓ One-way VSAT
 - ✓ Configuration: Essentially simplex communication
 - ✓ Master station sends data to the satellite (Ku Band)
 - ✓ Satellite relays over a large geographic area (broadcast coverage area)(Ku Band)

VSATs

- ✓ One-way VSAT
 - ✓ All the ground stations in this area can listen
 - ✓ So the satellite here just acts as a relay in the sky and it is used for broadcast
 - ✓ For example, the satellite television distribution system

✓ Dish for Houses

- ✓ Direct-To-Home DTH service which is been publicized by our Doordarshan
- ✓ In the house one can put an antenna which has the diameter of less than 1 m

VSATs

✓ Dish for Houses

- ✓ Using one set top box directly from the satellite the digitized television channels can be captured and then one can put it on the TV
- ✓ So, bypassing the cable operators by using the DTH service one-way communication is used for television signal distribution

VSATs

- ✓ Two-way VSAT configuration
 - ✓ Traffic is routed to the master control station hub
 - ✓ It is like a star. VSAT hubs are communicating through this master control station
 - ✓ Each VSAT has the capability to communicate directly with any other VSAT
- ✓ Mesh Topology

References

- ✓ Books:
 - ✓ Data communication and Networking, 4th Edition, Behrouz A Forouzan
 - ✓ Computer Networks, 4th Edition, Andrew S. Tanenbaum
- ✓ Various relevant Websites

Thank You